REMARKS

Claims 1-6 have been examined.

I. Rejections under 35 U.S.C. § 103(a) in view of Hansryd (A Simple, Low Timing Jitter, Sub-Multiple Clock Recovery Scheme, September 20-24, 1998, European Conference on Optical Communication, pgs. 471-472) and Andrews et al. (US 4,715,049).

The Examiner has rejected claims 1, 2 and 6 under 35 U.S.C. § 103(a) as allegedly being unpatentable in view of Hansryd and Andrews.

A. Claim 1

Applicant submits that claim 1 is patentable over the cited references. For example, claim 1 recites that a wideband bandpass filter has a relative bandwidth of 0.2% to 0.4% of a bit timing of transmitted signals.

In the March 21, 2006 Office Action, the Examiner acknowledged that Hansryd does not disclose a wideband bandpass filter having the claimed relative bandwidth, but contended that the Paine reference did. In view of the remarks presented in the June 21, 2006 Amendment, the Examiner has withdrawn the rejection in view of Paine. However, the Examiner now maintains that Hansryd discloses a similar concept and that the claimed feature is merely a matter of design choice (pgs. 2 and 3 of current Office Action). The Examiner further maintains that the percentage of 0.055% of bit timing calculated by the Applicant in the June 21, 2006 Amendment is incorrect and maintains that the actual value is 0.013%. Applicant submits that the value obtained by the Examiner, whether or not correct, is actually further away from the claimed bit

timing percentage. Applicant therefore again submits that Hansryd's Q factor and the bandwidth as a percentage of bit timing is dramatically different from what is required in the present invention.

Also, as set forth in the non-limiting embodiment on page 4 of the present Application, the claimed relative bandwidth/bit timing percentage relates to the derived filter quality factor Q. Applicant submits that such feature is not a matter of design choice. The bandwidth range of 0.2% to 0.4% of the bit timing has a special advantage in an optical burst mode. The burst mode requires fast bit phase acquisition which is equivalent to short transients, which is in turn an "as large as possible" bandwidth requirement (paras. [0016] and [0017] of present Application Publication). The clock recovery should survive the payload bit patterns with low or zero numbers of transitions (i.e., equal bits), which is equivalent to long transients, high Q, or narrow bandwidth (para. [0019]). The tradeoff is chosen at a value where the transients are long enough for the bit patterns (i.e., longer bit patterns are unlikely to occur), whereas the transients are not too long to not waste a lot of time at the beginning of each burst. In Hansryd, a 40Gbit/s experiment with sub-multiple clock recovery is taught. Such technique is applicable only to multiplexed signals (4 x 10G) in continuous and synchronous transmission. In burst mode, however, one could have bursts at plain 10G or bursts at plain 40G, but never a bitwise multiplex of several bursts. So, Hansryd is not applicable to the present invention.

In addition, Applicant notes that although the Examiner suggests that it would have been obvious to modify Hansryd's example for a different bit rate, the Examiner does not give further details as to the proposed modification. Hansryd chooses a Q factor of either 1800 (for the lab

implementation) or 2600 (for the ideal implementation). In these examples, the bandwidth as a percentage of the bit rate is (according to the examiner) 0.13%. To meet the claim requirement of a percentage between 0.2% and 0.4% of the bit rate, one would have to double the bandwidth as a percentage of bit rate. Applicant submits, however, that there is nothing in Hansryd to suggest that to a skilled artisan.

Claim 1 also recites that the wideband bandpass filter has a transient recovery time that is less than the time by which the signals are delayed on the delay path, and the time by which the signals are delayed on the delay path is in turn less than the decay time of the wideband bandpass filter.

The Examiner acknowledges that Hansryd fails to disclose the above features, but contends that Andrews does. In particular, the Examiner maintains that the delay set by the delay element 26 of Andrews discloses the claimed transient recovery time and decay time comparisons. As forth, however, in the June 21, 2006 Amendment, Applicant submits that Andrews merely discloses that the delay of the clock recovery signal and the retiming signal will be matched, regardless of variations between the data and clock signals (col. 4, lines 1-6). The delay circuit 26 simulates the clock recovery path, such that the signal path for DATA IN is subject to the same temperature variations, processing variations, etc. as the clock recovery signal path (col. 3, line 62- col. 4, line 1). Such disclosure fails to provide any teaching or suggestion of the claimed transient recovery time and decay time comparisons.

In view of the above remarks, the Examiner again cites to the same portion of Andrews as support for the rejection, i.e., col. 3, line 62 to col. 4, line 33. The Examiner also states that Andrews does not disclose the upper and lower bounds of the delay, but maintains that one of ordinary skill in the art could "easily" compute the upper and lower bounds and that such upper and lower bounds would correspond to the claimed transient recovery time and the decay time.

Applicant submits that the Examiner's position is entirely unsupported by Andrews. The Examiner maintains that one skilled in the art would be able to determine claimed features, where such features are not even mentioned in the reference. Further, there is likewise no teaching or suggestion that a transient recovery time would be less than a time by which signals are delayed, and a time by which the signals are delayed is less than a decay time, as recited in claim 1. Applicant submits that a prima facie case of obviousness has clearly not been established. Furthermore, Applicant notes that Andrews refers to delay adjustments in terms of fractions of a single bit period, whereas the claimed delay is in a range of filter transients which are multiples of bit periods (100 or more). Therefore, if the Examiner wishes to persist in the above rejection, Applicant respectfully requests the Examiner to cite to another reference to cure the deficient teachings of Hansryd and Andrews.

Based on the foregoing, Applicant submits that claim 1 is patentable over the cited references, and respectfully requests the Examiner to reconsider and withdraw the rejections.

B. Claim 2

Since claim 2 is dependent upon claim 1, Applicant submits that such claim is patentable at least by virtue of its dependency.

C. Claim 6

Since claim 6 contains features that are analogous to the features discussed above for claim 1, Applicant submits that claim 6 is patentable for at least analogous reasons as claim 1.

II. Rejections under 35 U.S.C. § 103(a) in view of Hansryd Andrews and Haykin (Communication Systems, 1978, John Wiley & Sons, pgs. 89-93)

The Examiner has rejected claim 3 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hansryd, Andrews and Haykin. However, since claim 3 is dependent upon claim 1, and Haykin fails to cure the deficient teachings of Hansryd and Andrews, in regard to claim 1, Applicant submits that claim 3 is patentable at least by virtue of its dependency.

III. Rejection under 35 U.S.C. § 103(a) in view of Hansryd, Andrews, Haykin and Malik et al. (US 5,577,056)

The Examiner has rejected claim 4 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hansryd, Andrews, Haykin and Malik. However, since claim 4 is dependent

upon claim 1, and Malik fails to cure the deficient teachings of Hansryd, Andrews and Haykin, in regard to claim 1, Applicant submits that claim 4 is patentable at least by virtue of its dependency.

IV. Rejection under 35 U.S.C. § 103(a) in view of Hansryd, Andrews and Pachynski (US 4,025,720)

The Examiner has rejected claim 5 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hansryd, Andrews and Pachynski. However, since claim 5 is dependent upon claim 1, and Pachynski fails to cure the deficient teachings of Hansryd and Andrews, in regard to claim 1, Applicant submits that claim 5 is patentable at least by virtue of its dependency.

V. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any

overpayments to said Deposit Account.

Respectfully submitted,

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Allison M. Tulino
Registration No. 48,294

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